

General information

Name: Rouhollah Habibey
Date of Birth: 30 March 1979
Nationality: Iran
Visa status: Germany (Permanent residency)
Address: University Hospital Bonn (UKB), Germany
email: rhabibey@uni-bonn.de
Tel: +49 1726231394
Homepage: www.habibey.com



Education

- 2012 - 2015 **Ph.D. Neuroscience and Brain Technologies**, Italian Institute of Technology (iit), Genoa, Italy. Supervisor: Prof. Axel Blau
Thesis: Microchannel scaffolds for axonal biophysics, electrophysiology and focal microdissection; On-chip axonal degeneration model.
- 2002 - 2006 **M.Sc. Human Physiology**, Tehran University of Medical Sciences, Iran.
Supervisor: Prof. Hamidreza Pazoki-Toroudi
Thesis: Morphine dependence preconditions rat kidney against ischemia reperfusion injury; Nitric oxide-dependent signaling pathways.
- 1998 - 2002 **B.Sc. Nursing**, Tehran University of Medical Sciences, Iran

Work experience

- Mar 2020 - **Senior Postdoctoral researcher**, University Hospital Bonn, Germany.
Now Prof. Volker Busskamp group
To engineer an axonal myelination and demyelination system that models multiple sclerosis on-chip. The system incorporates hiPSC-derived neurons, astrocytes, oligodendrocytes and microglia within a microfluidic device coupled with high-density MEA electrophysiology.
Tutoring: PhD and MSc students.
- Mar 2018 - **Postdoctoral researcher**, Centre for Regenerative Therapies Dresden (CRTD), Germany. Prof. Volker Busskamp group
Feb 2020
A long-term hiPSC-derived neuronal network model on standard and high-density MEAs integrated with holographic optogenetics for single neuron stimulation.
Tutoring: PhD and MSc students.
- Jun 2017 - **Visiting researcher**, IUF-Leibniz Research Institute for Environmental
Oct 2017 Medicine, Düsseldorf, Germany
3D brain-mimetic tissue printing (extrusion-based 3D bio-plotter) using stem cell derived neurons and spheroids.

- Apr 2015 - **Postdoctoral researcher**, Italian Institute of Technology, Genoa, Italy
May 2017 European project “Graphitivity” on surface plasmon resonance imaging (SPRi) sensor for probing metabolites and activity of neurons.
Tutoring: PhD and MSc students.
- Oct 2006 - **Research fellow**, Tehran University of Medical Sciences, Iran
Dec 2011 Project(s): Tissue tolerance against ischemia reperfusion injury on different organs (kidney, brain, skeletal muscle and skin).
Teaching: Courses on human neurophysiology, renal physiology, and circulation system for BSc and MSc students.

Publications First/Last Author:

1. **Habibey R**, Striebel J, Latifkhereshki R, Schmieder F, Latifi S. (2023). Microengineered 2D and 3D modular neuronal networks represent structure-function relationship. *bioRxiv*, doi: <https://doi.org/10.1101/2023.04.07.535751>.
2. **Habibey R** (2023). Incubator-independent perfusion system integrated with microfluidic device for continuous electrophysiology and microscopy readouts. *Biofabrication*, 15(2). doi: 10.1088/1758-5090/acb466
3. **Habibey R***, Striebel J*, Schmieder F, Czarske J, Busskamp V. (2022). Long-term morphological and functional dynamics of human stem cell-derived neuronal networks on high-density MEAs. *Front Neurosci*. 16:951964. doi: 10.3389/fnins.2022.951964. **Highlighted by MaxWell Biosystems.**
4. **Habibey R***, Rojo Arias JE*, Striebel J, Busskamp V. (2022). Microfluidics for Neuronal Cell and Circuit Engineering. *Chem Rev*. doi: 10.1021/acs.chemrev.2c00212.
5. **Habibey R**, Striebel J, Sharma K, Busskamp V. (2022). Optogenetic Control of Human Stem Cell-Derived Neuron. *Methods Mol Biol*. 2501:339-360. doi: 10.1007/978-1-0716-2329-9_17.
6. Schmieder F*, **Habibey R***, Striebel J, Büttner L, Czarske J, Busskamp V. (2022). Tracking connectivity maps in human stem cell-derived neuronal networks by holographic optogenetics. *Life Sci Alliance*. 5(7):e202101268. doi: 10.26508/lsa.202101268.
7. **Habibey R**, Sharma K, Swiersy A, Busskamp V. (2020). Optogenetics for neural transplant manipulation and functional analysis. *Biochem Biophys Res Commun*. 527(2):343-349. doi: 10.1016/j.bbrc.2020.01.
8. **Habibey R**, Latifi S, Mousavi H, Pesce M, Arab-Tehrany E, Blau A. (2017). A multielectrode array microchannel platform reveals both transient and slow changes in axonal conduction velocity. *Sci Rep*. 7(1):8558. Doi: 10.1038/s41598-017-09033-3.
9. Amani H*, **Habibey R***, Hajmiresmail SJ, Latifi S, Pazoki-Toroudi H, Akhavan O. (2017). Antioxidant nanomaterials in advanced diagnoses and treatments of ischemia reperfusion injuries. *J Mater Chem B*, 5:9452-9476

10. **Habibey R**, Golabchi A, Latifi S, Difato F, Blau A. (2015). Microchannel device for selective laser dissection, long-term microelectrode array electrophysiology and imaging of confined axonal projections. *Lab Chip*, 15(24):4578-90.
11. **Habibey R**, Golabchi A, Blau A. (2014). Microchannel scaffolds for neural signal acquisition and analysis. *Springer Series on Computational Neuroscience*. 13:47-64.
12. **Habibey R**, Ajami M, Hesami A, Ebrahimi SA, Pazoki Toroudi H. (2010). Nitric Oxide and renal protection in morphine dependent rats. *Free Radic Biol Med*. 49(6):1109-18.
13. **Habibey R**, Ajami M, Hesami A, Pazoki-Toroudi H. (2008). The mechanism of preventive effect of captopril on renal ischemia reperfusion injury is independent of ATP dependent potassium channels. *Iran Biomed J*. 12(4):241-5.
14. **Habibey R**, Pazoki-Toroudi H. (2008). Morphine dependence protects rat kidney against ischaemia-reperfusion injury. *Clin Exp Pharmacol Physiol*. 35(10):1209-14.

Collaborative Works:

15. Striebel J, Kalinski L, Sturm M, Drouvé N, Peters S, Lichterfeld Y, **Habibey R**, Hauslage J, El Sheikh S, Busskamp V, Liemersdorf C (2023). Human neural network activity reacts to gravity changes in vitro. *Front Neurosci* ,17:1085282. doi: 10.3389/fnins.2023.1085282.
16. Latifi S, Mitchell S, **Habibey R**, Hosseini F, Donzis E, Estrada-Sánchez AM, Nejad HR, Levine M, Golshani P, Carmichael ST. (2020). Neuronal Network Topology Indicates Distinct Recovery Processes after Stroke. *Cereb Cortex*. 30(12):6363-6375. doi: 10.1093/cercor/bhaa191.
17. Amani H, **Habibey R**, Shokri F, Hajmiresmail SJ, Akhavan O, Mashaghi A, Pazoki-Toroudi H. (2019). Selenium nanoparticles for targeted stroke therapy through modulation of inflammatory and metabolic signaling. *Sci Rep*. 9(1):6044. **Editor's choice: nanomedicine & neuroinflammation**
18. Hasan M, Latifi S, Kahn CJF, Tamayol A, **Habibey R**, Passeri E, Linder M, Arab-Tehrany E. (2018). The Positive Role of Curcumin-Loaded Salmon Nanoliposomes on the Culture of Primary Cortical Neurons. *Mar Drugs*. 16(7): 218. doi: 10.3390/md16070218.
19. Latifi S, Tamayol A, **Habibey R**, Sabzevari R, Blau A, Khan C, Geny D, Blau A, Linder M, Arab-Tehrany E. (2016). Natural lecithin promotes neural network complexity and activity. *Sci Rep*, 6:25777. DOI: 10.1038/srep25777
20. Wilk N, **Habibey R**, Golabchi A, Latifi S, Ingebrandt S, Blau A (2016). Selective comparison of gelling agents as neural cell culture matrices for long-term microelectrode array electrophysiology. *Oilseeds & Fats, Crops and Lipids*, 23 (1).
21. Saalfrank D, Konduri A, Latifi S, **Habibey R**, Golabchi A, Martiniuc A, Knoll A, Ingebrandt S, and Blau A. (2015). An incubator-independent cell culture perfusion platform for continuous long-term electrophysiology and time-lapse imaging reveals fluctuations in neural network activity and local architecture over months. *R. Soc. open sci*. 2 (6), 150031.

22. Zare Mehrjerdi F, Aboutaleb N, Pazoki-Toroudi H, Soleimani M, Ajami M, Khaksari M, Safari F, **Habibey R** (2015). The Protective Effect of Remote Renal Preconditioning Against Hippocampal Ischemia Reperfusion Injury: Role of KATP Channels. *J. Mol. Neurosci.* 57(4):554-60.
23. Zare Mehrjerdi F, Aboutaleb N, **Habibey R**, Ajami M, Soleimani M, Arabian M, Niknazar S, Hossein Davoodi S, Pazoki-Toroudi H. (2013). Increased phosphorylation of mTOR is involved in remote ischemic preconditioning of hippocampus in mice. *Brain Res.* 1526: 94-101.
24. Moghtadaei M, **Habibey R**, Ajami M, Soleimani M, Ebrahimi SA, Pazoki H (2012). Skeletal muscle post-conditioning by diazoxide, anti-oxidative and anti-apoptotic mechanisms. *Mol Biol Rep.* 39(12):11093-103.
25. Farahini H, **Habibey R**, Ajami M, Davoodi SH, Azad N, Soleimani M, et al. (2012). Late anti-apoptotic effect of KATP channel opening in skeletal muscle. *Clin Exp Pharmacol Physiol* 39 (11): 909-916.
26. Pazoki-Toroudi H, Babakoohi S, Nilforoushzadeh MA, Nassiri-Kashani M, Shizarpour M, Ajami M, **Habibey R**, Sadr B, Rashighi-Firoozabadi M, Firooz A. (2012). Therapeutic effects of minoxidil high extra combination therapy in patients with androgenetic alopecia. *Skinmed* 10(5): 276-82.
27. Ajami M, Davoodi SH, **Habibey R**, Namazi N, Soleimani M, Pazoki-Toroudi H. (2012). Effect of DHA+EPA on oxidative stress and apoptosis induced by ischemia-reperfusion in rat kidneys. *Fundam Clin Pharmacol.* 27(6): 593-602.
28. Ajami M, Egtesadi S, **Habibey R**, Mirzay Razaz J, Peyrovi H, Zarrindast M, Pazoki-Toroudi H. (2012). Effect of short and long-term treatment with DHA + EPA on scopolamine induced amnesia. *Iran J Pharm Res.* 11 (2): 533-540.
29. Ajami M, Egtesadi S, Razaz JM, Kalantari N, **Habibey R**, Nilforoushzadeh MA, Zarrindast M, Pazoki-Toroudi H. (2011). Expression of Bcl-2 and Bax after hippocampal ischemia in DHA + EPA treated rats. *Neurol Sci.* 32(5): 811-8.
30. Pazoki-Toroudi H, Ajami M, **Habibey R**. (2010). Pre-medication and renal pre-conditioning: a role for alprazolam, atropine, morphine and promethazine. *Fundam Clin Pharmacol.* 24(2):189-98.
31. Ajami M, Egtesadi S, Pazoki-Toroudi H, **Habibey R**, Ebrahimi S. (2010). Effect of crocus sativus on gentamicin induced nephrotoxicity. *Biol Res.* 43: 83-90.
32. Pazoki Toroudi H, Ajami M, Babakoohi SH, Khaki L, **Habibey R**, Firooz A. (2010). Effects of diphencyprone on expression of Bcl2 protein in patients with alopecia areata. *Immunopharmacol Immunotoxicol.* 32(3):422-5.
33. Pazoki-Toroudi H, Nassiri-Kashani M, Tabatabaie H, Ajami M, **Habibey R**, Shizarpour M, Babakoohi S, Rahshenas M, Firooz A. (2010). Combination of azelaic acid 5% and erythromycin 2% in the treatment of acne vulgaris. *J Dermatolog Treat.* 21(3):212-6.
34. Pazoki-Toroudi H, Ajami M, **Habibey R**, Hajiaboli E, Firooz A. (2009). The effect of enalapril on skin flap viability is independent of angiotensin II AT1 receptors. *Ann Plast Surg.* 62(6):699-702.

Invited talks and conference proceedings

1. Habibey R, Striebel J, Busskamp V. Long-term modular hiPSC-derived neuronal networks on-Chip. MPS World Summit, June 26-30, Berlin, Germany, 2023. **[Poster]**
2. Habibey R. Functional 3D engineered modular networks-on-chip. Brain on Chip symposium, May 24-27, Braunschweig, Germany, 2023. **[Invited speaker]**
3. Habibey R. Long-term morphological and functional dynamics of human stem cell-derived neuronal networks. 3rd In-Vitro 2D & 3D Neuronal Networks Summit (MaxWell Summit 2023), May 15-17, Zürich, Switzerland, 2023. **[Invited speaker]**
4. Schmieder F*, Habibey R*, Busskamp V, Büttner L, Czarske JW. Investigation of in vitro human iPSC-derived neuronal networks using holographic stimulation, SPIE 11227, Optogenetics and Optical Manipulation 2020, 112270D (9 March 2020).
5. Habibey R. Optical manipulation of engineered neuronal circuits within microfluidic devices. Symposiums on Measurement technology and sensors (MST), 20 Nov 2019, Dresden, Germany. **[Invited speaker]**
6. Habibey R and Blau A. Modular and patterned 3D cortical networks on microelectrode arrays as a brain-on-a-chip model. Proceedings of the Society for Neuroscience (SFN) on November 12-16, San Diego, CA, 2016. **[Poster]**
7. Habibey R, Mousavi H, Pesce M, Nanni M, Blau A. Non-invasive long-term recording of microchannel-confined axonal activity. MEA Meeting 2016 | 10th International Meeting on Substrate-Integrated Electrode Arrays. **[Poster]**
8. Habibey R, Golabchi A, Difato F, Konduri A, Nanni M, Succol F, Blau A. Oriented cortical network accessible for recording from whole modules and connections on polydimethylsiloxane (PDMS) scaffolds. 9th international Meeting on Substrate-Integrated Micro Electrode Arrays, A. Stett and G. Zeck (Eds.), NMI. **[Poster]**
9. Habibey R, Golabchi A, Nanni M, Difato F, and Blau A. The pattern of activity in injured and non-injured axons after selected axonal microdissection in microchannels. Proceedings of the Society for Neuroscience (SFN) on November 15-19, Washington, DC, 2014. **[Poster]**
10. Habibey R, Golabchi A, Difato F, Nanni M, Succol F, and Blau A. Long-term monitoring of action potential propagation in axons growing inside microtunnels. 9th Federation of European Neuroscience Societies (FENS) on July 5-9, Milan, 2014. **[Poster]**
11. Habibey R, Golabchi A, Difato F, Nanni M, Succol F, and Blau A. Molding microchannel and brain implant scaffolds from microstructured double layer photo resin master casts Concepts and examples. Proceedings of the International Congress on Neurotechnology, Electronics and Informatics on September 18-20, Algarve, Portugal, 2013. **[Invited speaker]**
12. Habibey R, Golabchi A, Cerino M, Difato F, Nanni M, Succol F, and Blau A. Design and fabrication of microchannel and cell culture scaffolds for neural guidance and enhanced optical accessibility of neural networks in vitro. 8th International Meeting on Substrate-Integrated Microelectrode Arrays, A. Stett and G. Zeck (Eds.), NMI. **[Poster]**

Scholarships/Awards

- 2023 Highlighted by MaxWell Biosystems.
- 2011 Ranked 1st for Ph.D. scholarship, Genoa, Italy.
- 2002 Ranked 4th in the national Physiology M.Sc. entrance exam, Iran.

Academic activities and administration

- 2006-Now Tutoring & supervising 4 PhD, 12 master students, 3 medical students
- 2014-Now Reviewer for journals (J Neur Eng, Sci Rep,..)
- 2022-Now Member of MPS world summit (microphysiological systems)
- 2014-2017 Member of Society for Neuroscience (SFN)
- 2012-2016 Organizer (PhD students journal club, Italian Institute of Technology).

Lab methods

- Primary and iPSC cell culture (2D, 3D, spheroid and organoid)
- Cell line engineering
- Organ-on-chip, microfluidics and perfusion platforms
- Microfluidics (design, fabrication and validation)
- Electrophysiology (standard and high-density MEAs)
- Optogenetics
- Optical tools (laser microdissection, holographic stimulation)
- Microscopy
- Calcium imaging (in vitro)
- Wetlab (RT-PCR, Western blot, RNA-Seq,...)

Software skills

- E-CAD: Autodesk, Expert (Silvaco), CleWin, KLayout
- Programming: MATLAB, python
- Image analysis: ImageJ
- Statistical analysis: SPSS, OriginLab, GraphPad Prism
- Database design: Access, Endnote, Mendeley
- Neural signal analysis: Neuroexplorer and Plexon Offline Sorter

Language skills

- Azerbaijani: Mother tongue
- Persian (Farsi): National language
- English: Fluent
- German: Intermediate (B1)
- Italian: Basic

References

Prof. Dr. Volker Busskamp

University of Bonn, Bonn, Germany
volker.busskamp@uni-bonn.de
<https://www.ukbonn.de/ag-busskamp/>
Tel: +49 228 28713687

Prof. Dr.-Ing. habil. Jürgen Czarske

Director of Institute of Circuits and Systems,
Technische Universität Dresden (TU Dresden), Dresden, Germany
juergen.czarske@tu-dresden.de
Tel.: +49 (351) 463-34803

Dr. rer. nat. (PhD) Axel Blau

Entrepreneur, Science and Technology Consultant, Genova, Italy
axel.blau@outlook.de
+39 010 7178 1729

Prof. Elmira Arab-Tehrany

Laboratoire d'Ingénierie des Biomolécules, Université de Lorraine,
Vandoeuvre-Lès-Nancy Cedex, France
elmira.arab-tehrany@univ-lorraine.fr
Tel: +333 83 59 58 77

Prof. Hamidreza Pazoki-Toroudi

Tehran University of Medical Sciences,
Tehran, Iran
hpazooki@farabi.tums.ac.ir
+98 9126383385